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(54) Title: NEW TYPE OF CATALYTIC MATERIALS BASED ON ACTIVE METAL-HYDROGEN-ELECTRONEGATIVE ELEMENT COMPLEXES FOR HYDROGEN TRANSFER

(57) Abstract: The present invention relates to a composition of matter prepared in accordance with a method comprising the steps of: (a) combining a substance selected from the group consisting of: metal or metalloid, or an alloy thereof, or a compound thereof, or an homogeneous or inhomogeneous combination of at least two of the metal or metalloid, the alloy thereof, or the compound thereof, with a source of hydrogen, to form a first intermediate, (b) milling the first intermediate to effect reaction between the substance and the hydrogen to form a second intermediate, (c) combining the second intermediate with a source of an electronegative element, to form a third intermediate, and (d) milling the third intermediate to effect reaction between the second intermediate and the electronegative element. The composition of matter could be used as a hydrogen transfer facilitator or catalyst to enhance the kinetics of hydrogenation and dehydrogenation reactions.

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# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/CA 03/00960

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 C01B3/00 B01J31/12 B01J31/40 B01J31/26

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C01B B01J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

WPI Data, PAJ, EPO-Internal

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X          A	OELERICH W ET AL: "metal oxides as catalysts for improved hydrogen sorption in nanocrystalline Mg-based materials " JOURNAL OF ALLOYS AND COMPOUNDS, ELSEVIER SEQUOIA, LAUSANNE, CH, vol. 315, 2001, pages 237-242, XP002263119 ISSN: 0925-8388 the whole document  ---  -/--	1,2,5,6, 13,14, 16, 24-26, 29,30, 37,38, 40,41 59,62, 65-67

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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- \*O\* document referring to an oral disclosure, use, exhibition or other means
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- \* & \* document member of the same patent family

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PCT/CA 03/00960

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	OELERICH W ET AL: "Comparison of the catalytic effects of V, V2O5, VN, and VC on the hydrogen sorption of nanocrystalline Mg" JOURNAL OF ALLOYS AND COMPOUNDS, ELSEVIER SEQUOIA, LAUSANNE, CH, vol. 322, no. 1-2, 28 June 2001 (2001-06-28), pages L5-L9, XP004243340 ISSN: 0925-8388	1,2,5,6, 13,14, 16, 24-26, 29,30, 37,38, 40,41
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